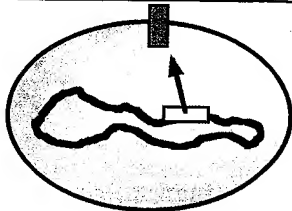


**Conventional RB51 vaccine**



**Normal Brucella RB51 Vaccine**

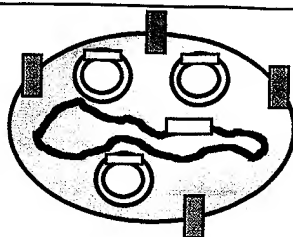
↓  
**Vaccinate animals**

↓  
**Animal develops  
Immune response**

↓  
**Challenge with  
virulent Brucella**

↓  
**Certain level of  
protection**

**Novel corexpression of  
homologous antigen**



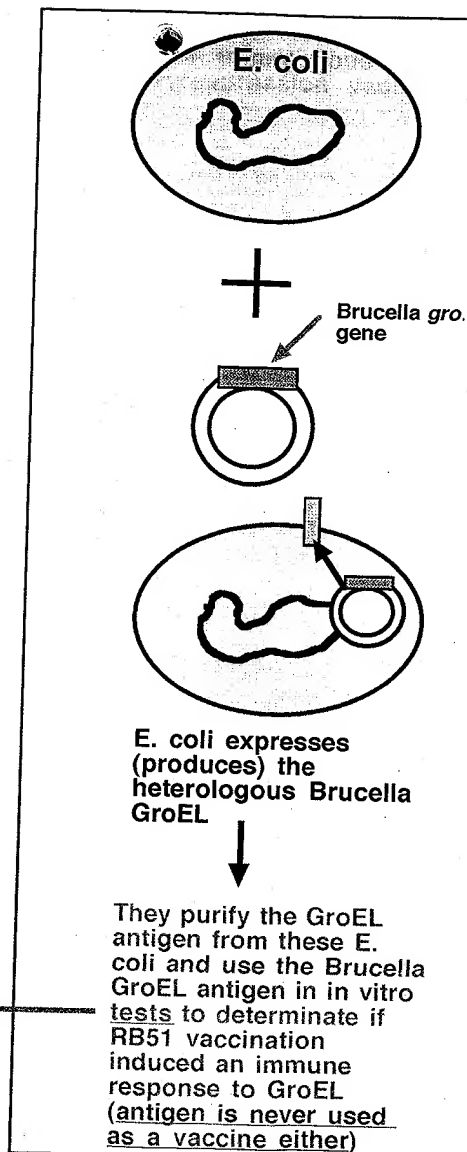
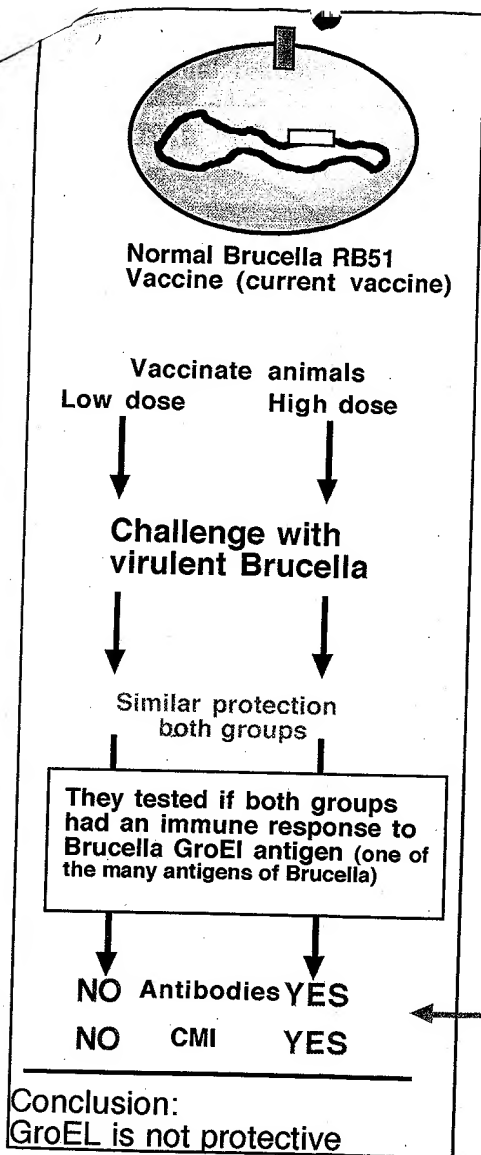
**Brucella RB51 vaccine  
overexpressing  
homologous antigen ( ■ )**

↓  
**Vaccinate animals**

↓  
**Animal develops  
Immune response  
but stronger  
against the  
overexpressed  
homologous  
antigen**

↓  
**Challenge with  
virulent Brucella**

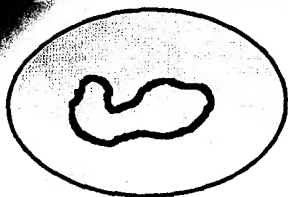
↓  
**Higher level of  
protection  
(20x or more)**



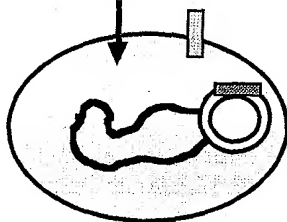
**Stevens and coworker's work is not related to the overexpression of homologous antigens concept used to increase Brucella vaccine efficacy.**

## Conventional recombinant vaccines

### Bacteria "X"



Heterologous antigen gene  
from bacteria "Y"



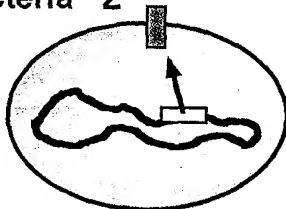
Bacteria "X" expresses  
(produces) the  
heterologous Bacteria  
"Y" antigen



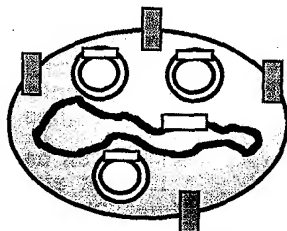
If used as vaccine  
protects against  
bacteria "Y" and  
may be "X"

## Novel homologous overexpression vaccine

### Bacteria "Z"



Homologous antigen  
gene from bacteria  
"Z"



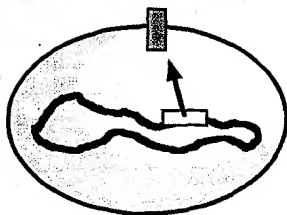
Bacteria "Z" overexpresses  
(overproduces) the  
homologous Bacteria "Z"  
antigen in large amounts



If used as vaccine  
protects against  
bacteria "Z" at  
much higher levels

**I.**

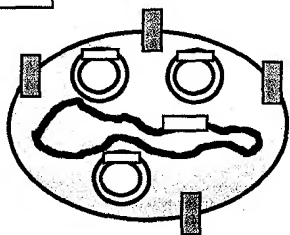
## Bacteria "Z"



Protects against  
bacteria Z

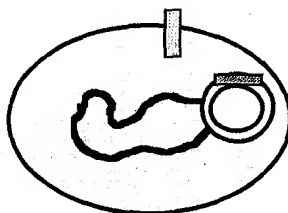
Contrasting Conventional recombinant vaccine expressing a heterologous antigen with our vaccine where homologous antigen overexpression is coupled to heterologous antigen expression.

**II.**



Protects against  
bacteria Z much  
better (20x or more)

## Bacteria "X"

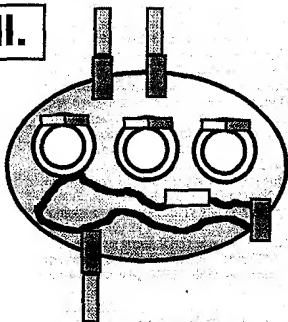


Bacteria "X" expresses  
(produces) the  
heterologous Bacteria  
"Y" antigen

If used as vaccine  
protects against  
bacteria "Y" \* and  
may be "X"  
(\* if Y antigen is a  
protective antigen)

If bacteria X  
expresses a  
protective antigen  
from bacteria Z it  
may protect but the  
levels will be similar  
to I.

**III.**



Protects against  
bacteria Z much  
better (20x or more)  
and protects  
against bacteria